



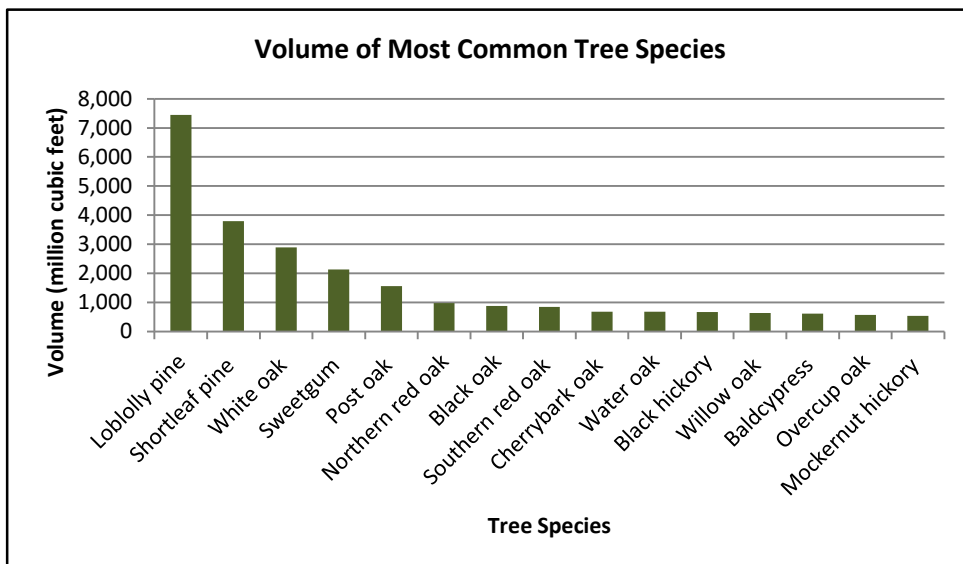
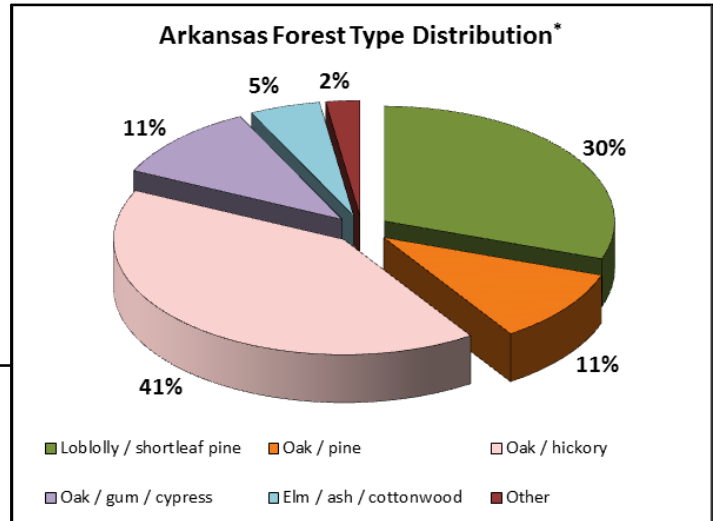
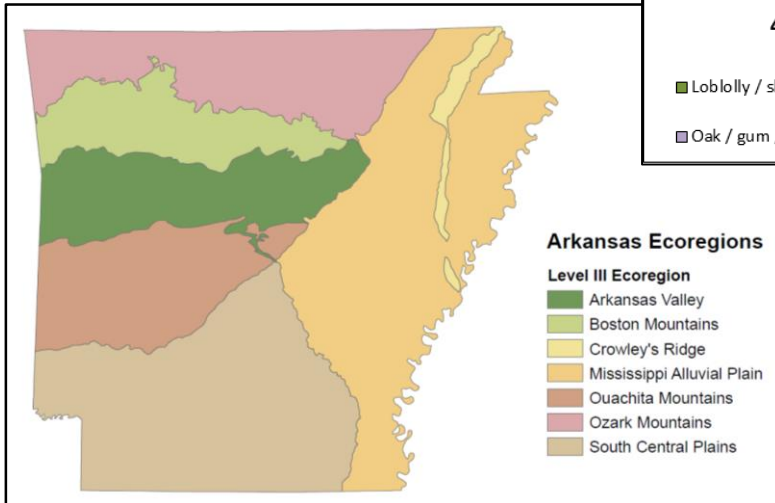
Arkansas

Forest Health Highlights for 2015

Forest Resource

Arkansas's forests cover 19 million acres, which is more than 56% percent of the state's land area. The majority of the state's forested land, some 12.5 million acres, is in non-industrial private ownership, while approximately 2.5 million acres is national forest. Scenic beauty is showcased in the Ozark, Boston, and Ouachita Mountain ranges.

Tourism and outdoor recreation opportunities are plentiful within the state's diverse landscape. Major forest types in the state include oak-hickory, loblolly-shortleaf pine, oak-pine, and bottomland hardwood. According to recent forest inventory estimates, volume growth is exceeding the volume harvested, and this is true for both hardwood and pine volumes.



Weather Related Damages

Arkansas witnessed its share of extreme weather events in 2015. Heavy rainfall cause exceedingly wet conditions through the months of spring. Flooding was a persistent issue in many low areas of the state, and it caused some forest dieback that was observable with the use of monitoring tools that utilize satellite imagery such as Forest Disturbance Monitor or ForWarn.

A severe hail storm caused early-spring defoliation around Arkansas's highest point, Mt. Magazine. Approximately 12,000 acres were mapped and documented with hail damage on and around Mt. Magazine. Forests recovered with a late-spring flush.

Unusual Forest Insect Events

Arkansas saw the emergence of the 13-year **periodical cicada**, Brood XXIII. The noisy, mass-emergence was reported throughout the eastern and central portion of the state. As one might expect, frequent notices, phone calls, and media releases were needed to keep the public informed (and reassured) of this amazing event.

In the central region of the state, reports of oak defoliation were occurring in April. The culprit was not apparent during the day, but when the trees were inspected at night, hundreds of **May beetles** could be seen consuming the leaves. Damage was characterized by consumption of the entire leaf to the base of the petiole or, in some cases, young leaves were clipped from the tree and littered the ground. This strange outbreak of *Phyllophaga* caused severe defoliation on several species of oak, including: southern red oak, cherrybark oak, white oak, and pin oak. Trees growing alone in yards or those on stand edges were most affected. Almost all damaged trees recovered from this early defoliation.



White oaks in the Boston Mountains were affected by **jumping oak gall** in late-May through June. This widespread crown-fading was first observed using Forest Disturbance Monitor. A ground check with Forest Service employees confirmed the presence of jumping oak gall across more than 20,000 acres of the Ozark National Forest, though effects could be observed sporadically across the entire southern expanse of the southern Boston Mountains. The galls, produced by Cynipid wasps, caused white oak crowns to turn brown and, in severe cases, the abundance of galls caused defoliation. A majority of affected trees produced new foliage and recovered over the summer.

A few reports of **oak leaf itch mite** occurred during late-summer and fall. This mite, *Pyemotes herfsi*, is a generalist predator that preys on midge larvae that produce galls on the edges of oak leaves. When their population increases, the mites will fall from the canopy and can land on humans or pets. They can bite causing red bumps that itch.

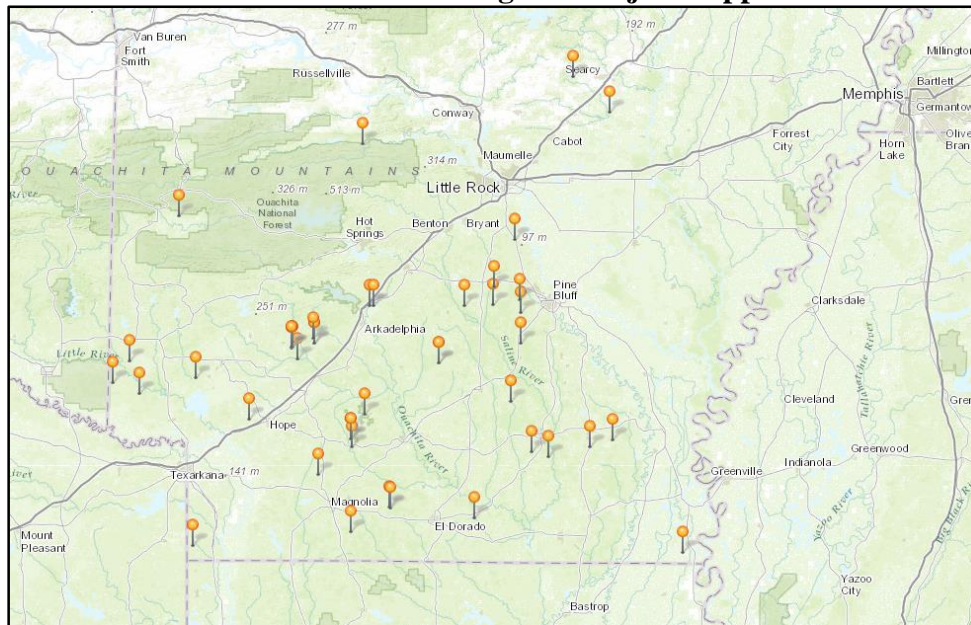
Southern Pine Beetle (SPB)

SPB is historically recognized as Arkansas's most significant forest insect pest. In 2015, annual trapping surveys continued in the southern portion of the state. Seventeen traps were placed in five selected counties baited with frontalinal and alpha-pinene. Eight of those traps also used endo-brevicomin, a long-range attractant, for the first time in AR. No SPB were captured in 2015. No SPB outbreaks were detected in 2015, a trend that has lasted for over a decade and a half. SPB were captured in LA by Forest Health Protection personnel, but the SPB population west of the Mississippi River continues to be scarce.

SPB Prevention Program (SPBPP)

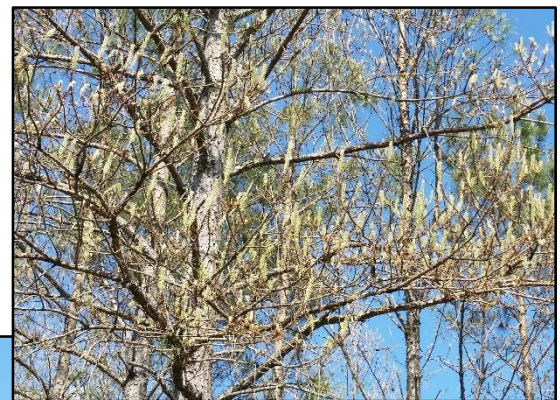
The Arkansas SPBPP provides cost-share incentive to landowners so their dense pine stands may be thinned. It is eagerly sought and well received by landowners. A small percentage of funding is also provided for the cost-share of prescribed burns, pine release treatments, and wide-spaced plantings. The state is also making special effort to reach out to minority and underserved landowners. In 2015, the program's funding was distributed to Arkansas Forestry Commission (AFC) districts with consideration of their acreage of SPB hazard. This methodology was the first step in fairly distributing the state allocation in accordance with the national program goals. Forty four projects covering 1,694 acres was approved for cost-share funding in 2015.

Locations of SPB Prevention Program Projects Approved in 2015



Pine Sawflies

Throughout Arkansas, a few pine sawfly species cause defoliation of shortleaf and loblolly pine. In spring of 2015, Loblolly pine sawfly, *Neodiprion taedae linearis*, caused heavy defoliation in several hundred acres of loblolly pine plantations in Ashley County. AFC personnel in the country expressed that the outbreak was the most severe in recent history. Complete defoliation of 10-15 year old loblolly pine was not uncommon (see picture to the right). Damage was not limited to younger stands as the tops of older timber was damaged as well. Trees did recover from what be described as a growth and aesthetic loss.



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Gypsy Moth

As one of the United States' most important invasive forest pests, this insect poses a serious threat to Arkansas's hardwood forests. Pheromone trapping is a tool that is implemented in Arkansas by the AR State Plant Board yearly. AFC contributes to the survey by setting up more than 300 traps every year (at least three per county). In each of the past three years, one suspect adult male was intercepted in a pheromone trap. However, in 2015, no gypsy moths were found in AFC traps.

Oak Decline

Oak mortality occurs throughout Arkansas. Individual cases may be attributed to drought and poor site condition, but it is hard to pinpoint the cause of stand or even landscape-scale losses. This widespread issue has been termed oak decline, a condition that is caused by several known and unknown factors. In 2015, a team of AR researchers, agency representatives, and land managers gathered to discuss this issue in greater detail. This longstanding group, known as the Oak Ecosystem Restoration Team, is reorganizing efforts to take action on the interior highlands. In addition, Forest Health Protection researchers began research to uncover any unknown factors involved such as fungal pathogens or improper management techniques.

Ips Pine Engraver Beetles

Statewide dry conditions during 2011 and 2012 increased *Ips*-associated mortality. However, funnel traps baited with *Ips* pheromone in 2013 revealed that abundance declined sharply following this observable heavy outbreak. Associated damages were rare in 2014, and for most of Arkansas this continued to be true in 2015. However, incited by a late-summer drought, observations of an *Ips* outbreak were reported in: Polk, Montgomery, Pike, Howard, and Sevier. The area was aerially surveyed in October and damages were mapped. 186 acres had losses greater than 50% and another 1,286 acres had losses less than 50%. Following the discovery of that outbreak, a few more cases of severe *Ips* damages (greater than 50% losses) were found in other southern Arkansas counties.



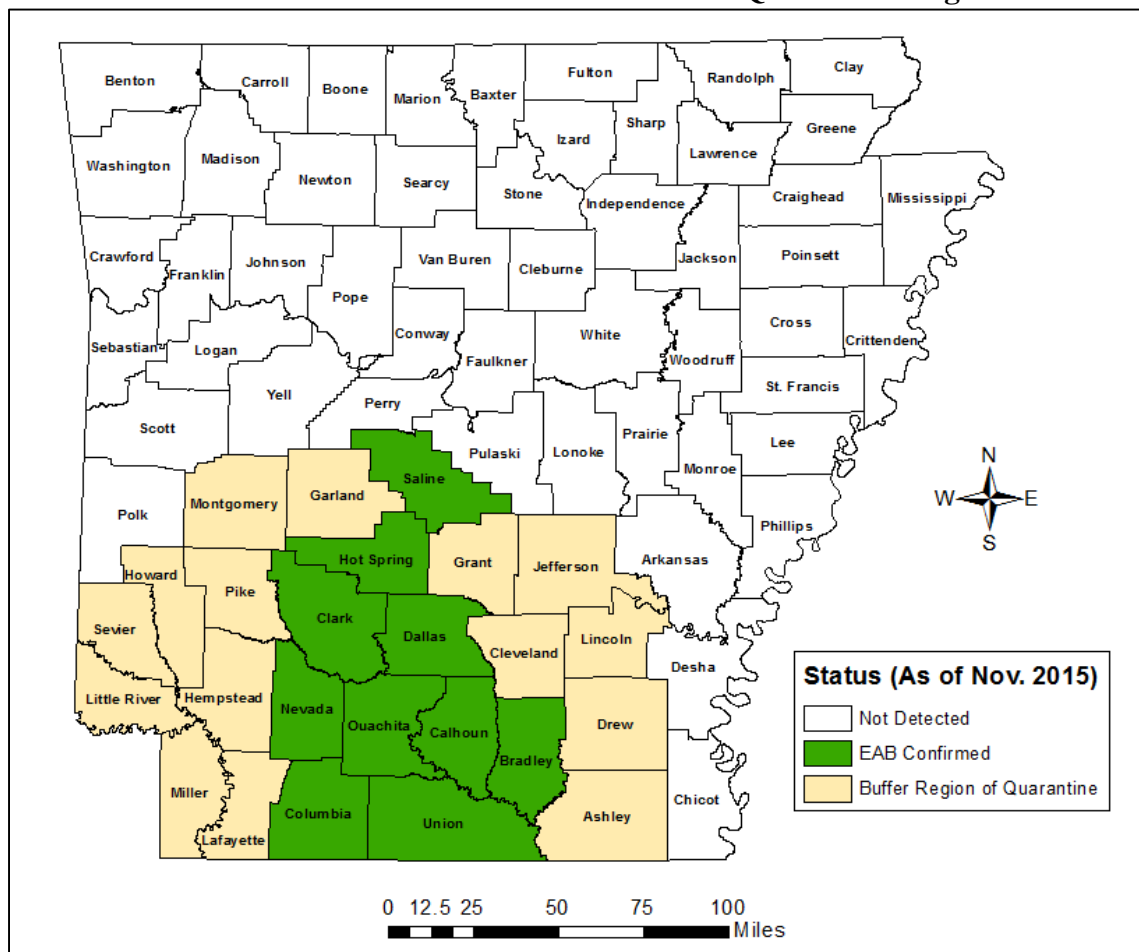
Emerald Ash Borer

In 2014, APHIS-PPQ and Arkansas State Plant Board (ASPB) confirmed that the emerald ash borer (EAB) was present in six south Arkansas counties. The Arkansas State Plant Board enacted a quarantine encompassing 25 southern counties, including the six confirmed counties and 19 “buffer” counties around the confirmations. Several agencies have joined efforts to monitor EAB and educate the state on the basics of detecting affected ash trees. These groups also emphasize the dangers of moving firewood from area to area to the public.

According to FIA estimates, ash trees represent less than 3% of Arkansas’s forests. However, in the bottomland hardwoods found in the eastern and southern parts of the states, they are a much more valuable component. Ash is also a popular yard planting and is prevalent in the urban landscape. Ash was frequently used in restoration planting, and they grow as volunteers in many newly reforested areas. The loss of high-grade ash in bottomland sites will have economic concerns, especially for sawmills that specialize in hardwood products along the Mississippi River.

In 2015, EAB was confirmed in four more AR counties (see map). Two of these detections involved a visual inspection of infested trees and a sample adult EAB was collected then confirmed by the ASPB and APHIS-PPQ. No EAB has been found outside of the established quarantine area.

Counties with EAB Confirmations and the Quarantine Region



The majority of observable damages can be found along the Ouachita River between Ouachita and Calhoun Counties. AR is on the cusp of noticing ash mortality. One big concern is that EAB will move into the Arkansas and Mississippi River Valleys where ash is also common. There is no indication that

this has already happened, but visual surveys and traps will be used to monitor the arrival of EAB to these areas.

The ASPB, assisted by AFC personnel, began introductions of EAB biocontrol wasps in 2015. These tiny wasps (no larger than a pencil tip) are from the native origin of EAB in Asia. So far, *Tetrastichus planipennisi* was introduced to three sites in AR, and each got approximately 3,000 wasps. More sites will be chosen in the future. The biocontrol offers a counter defense against EAB, and they are expected to limit EAB population growth in the release sites.

Redbay Ambrosia Beetle and Laurel Wilt Disease

As of November 2015, laurel wilt disease and its vector, the redbay ambrosia beetle, have not yet been discovered in Arkansas. However, the disease and beetle were detected in Louisiana's Union and Claiborne Parishes a few miles south of the Arkansas border. AFC personnel were instructed on how to spot this disease in sassafras. Any suspect samples collected are sent to Forest Health Protection in Pineville, LA. The natural range of redbay does not extend into Arkansas, though laurel wilt is a threat to sassafras and a few rarer members of the Lauraceae family. According to forest inventory estimates, sassafras makes up less than one percent Arkansas's live tree volume greater than five inch d.b.h. However, this tree is very prevalent in size classes less than five inches. Sassafras is common in the interior highlands and Ozark Mountains.

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The mission of the Arkansas Forestry Commission is to protect Arkansas's forests, and those who enjoy them, from wildland fire and natural hazards while promoting rural and urban forest health, stewardship, development, and conservation for all generations of Arkansans. To report wildfires, call 1-800-468-8834. To report prescribed burns, call 1-800-830-8015. For more information about the Arkansas Forestry Commission, visit www.forestry.arkansas.gov.